

REMARKS

In view of the above amendments and the following remarks, reconsideration of the rejections contained in the Office Action of December 8, 2006 is respectfully requested.

By this Amendment, claims 15, 16 and 19-24 have been amended, and claim 17 has been cancelled. Thus, claims 15, 16 and 18-24 are currently pending in the application. No new matter has been added by these amendments.

On pages 2-3 of the Office Action, the Examiner rejected claim 15 under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. In particular, the Examiner takes the position that “there is not support for the claim recitation discloses a first flow channel and a second flow channel on the same gas flow plate and a switching device switches the first and second flow channel from parallel to series connection and vice versa.”

It is first noted that claim 15 has been amended to recite a cell having a gas flow plate, a first gas flow channel and a second gas flow channel both provided in the gas flow plate, and switching devices for switching a connection between the first and second gas flow channels from parallel to series, and from series to parallel.

It is also noted that amended claim 15 is fully supported by the specification and figures in the present application. In particular, Figs. 2 and 4 show a first gas flow channel and a second gas flow channel both provided in one gas flow plate. Figs. 2 and 4 also show three gas manifolds 2 on the left side of the plate. Figs. 2 and 4 clearly show a first gas flow channel extending from the upper manifold 2 (at the inlet 1 in Figs. 2 and 4) to the center manifold 2, and a second gas flow channel from the center manifold 2 to the lower manifold 2 (at the outlet 3 in Fig. 2 and at the inlet 1 in Fig. 4). As is apparent from the arrows in Figs. 2 and 4, the two gas flow channels are connected in series in Fig. 2 and in parallel in Fig. 4. Further, paragraphs [0030] to [0032] of the specification describe how the combination of open and closed switching devices determines whether the first and second flow channels are connected in series or in parallel, as illustrated in Figs. 1-4.

In addition, the Examiner indicates that Figs. 1-15 of the specification “do not show or disclose any type of switching devices on the plate.” However, as indicated above, the phrase

“within said at least one of said cathode gas flow plate and said anode gas flow plate” has been deleted from the recitation of the switching devices in claim 15. Therefore, it is respectfully submitted that amended independent claim 15 is fully supported by the specification and drawings so as to enable one of ordinary skill in the art to make and use the invention. Accordingly, it is respectfully submitted that the Examiner’s rejection under § 112, first paragraph, is not applicable to amended claim 15.

On page 3 of the Office Action, the Examiner rejected claim 15 under 35 U.S.C. § 112, second paragraph, as being indefinite. In particular, the Examiner asserts that the limitation in original claim 15 which recites switching devices for switching a connection between said first and second gas flow channels within the plate is unclear, because this limitation can be interpreted as requiring a switching device on the plate. However, as discussed above, the phrase “within said at least one of said cathode gas flow plate and said anode gas flow plate” has been deleted from the recitation of the switching devices in claim 15. Therefore, it is respectfully submitted that the Examiner’s rejection under § 112, second paragraph, is not applicable to amended claim 15.

On page 4 of the Office Action, the Examiner rejected claims 15-24 under 35 U.S.C. § 102(e) as being anticipated by McElroy (US 6,251,534). For the reasons discussed below, it is respectfully submitted that the present claims, as amended, are clearly patentable over the prior art of record.

The discussion of the invention provided below makes reference to the specification and figures of the present application. However, these references are made only for the Examiner’s benefit, and are not intended to otherwise limit the claims.

Amended independent claim 15 recites a fuel cell system which includes a cell having a gas flow plate. The fuel cell system also includes a first gas flow channel and a second gas flow channel both provided in the gas flow plate. The fuel cell system further includes switching devices for switching a connection between the first and second gas flow channels from a parallel connection to a series connection, and from a series connection to a parallel connection.

McElroy discloses a fuel cell cascade flow system which, as shown in Fig. 1, includes a fuel cell stack 200 and a fuel cell stack 300 separated by a partition 110. Each fuel cell stack 200, 300 include a plurality of fuel cells 150, and each fuel cell includes an anode flow field plate

220 and a cathode flow field plate 210. The anode flow field plate 220 has channels 226 (as shown in Fig. 3) and the cathode flow field plate 210 has channels 216 (as shown in Fig. 4). Fuel cell stack 200 has an inlet 280 and an outlet 290, and fuel cell stack 300 has ports 310, 320 and 330.

However, McElroy does not disclose switching devices for switching a connection between the first and second gas flow channels from a parallel connection to a series connection, and from a series connection to a parallel connection, as required by amended independent claim 15. In particular, McElroy only discloses a gas flow plate (*e.g.*, anode flow field plate 220, as shown in Fig. 3) having flow channels 226, and does not disclose that a connection between the flow channels 226 in one gas flow plate is switched from a parallel connection to a series connection, and from a series connection to a parallel connection.

Further, McElroy only discloses a series of valves 500, 510, 520 which switch the connection between separate stacks of fuel cells from a series connection to a parallel connection. McElroy discloses at column 6, lines 8-24, that during low power output conditions, the valves 500, 510, 520 are set such that gas flows through the fuel cell stack 200 and then enters fuel cell stack 300 after leaving the fuel cell stack 200 (*i.e.*, gas flows through fuel cell stacks 200, 300 in series). McElroy also discloses at column 6, lines 28-41, that during high power output conditions, the valves are set such that gas flows through fuel cell stack 200 and, at the same time, gas flows through fuel cell stack 300 from port 310 (*i.e.*, gas flows through fuel cell stacks 200, 300 in parallel). Therefore, McElroy does not disclose switching devices for switching a connection between first and second gas flow channels, both of which are provided within a plate, because McElroy only discloses switching the connection between separate stacks of fuel cells.

Therefore, it is respectfully submitted that amended independent claim 15, as well as claims 16 and 18-24 which depend therefrom, are clearly allowable over the prior art of record.

In view of the foregoing amendments and remarks, it is respectfully submitted that the present application is clearly in condition for allowance. An early notice to that effect is respectfully solicited.

If, after reviewing this Amendment, the Examiner feels there are any issues remaining which must be resolved before the application can be passed to issue, the Examiner is respectfully requested to contact the undersigned by telephone in order to resolve such issues.

Respectfully submitted,

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